PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

Express Mail Label No.: EV 326 567 967 US

Attorney Docket No.: Soyu C-6B

September 23, 2003

Inventor(s): Masaya OKITA

Title: METHOD FOR DRIVING A NEMATIC LIQUID CRYSTAL

Mail Stop Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

COMMENTS BEFORE FIRST OFFICE ACTION

Sir:

Prior to issuance of the first Office Action in the above-identified application, kindly enter the following:

REMARKS

This continuation application has been filed in response to the July 22, 2003 telephone interview with Examiner Piziali and Supervisory Patent Examiner Shalwala and an August 19, 2003 interview with Examiner Piziali.

This continuation application is identical to parent application Serial No. 09/801 098 filed March 7, 2001, except for the following features. Paragraphs 1 and 35 in the specification have been revised in accordance with Applicant's February 5, 2003 amendment. Figure 2 now corresponds to Figure 2 in the originally filed parent application Serial No. 09/115 018, filed July 14, 1998. This admitted prior art Figure does not add any features to Applicant's disclosed or claimed invention.

New claims have been presented. Claim 8 recites "applying a voltage corresponding to image data for each pixel". Any display that produces images is defined by an array of pixels. The use of pixels is inherent in any liquid crystal display or CRT monitor.

Attached Form PTO-1449 lists references that have been considered by the Examiner in the parent application. MPEP §609 I(a)(2) at page 600-119 indicates that information considered in a parent application need not be resubmitted in a continuing application. Applicant provides Form PTO-1449 so that the listed documents will be printed on a patent issuing from this application. Initialing and return of Form PTO-1449 is respectfully requested.

The July 22, 2003 Interview Summary in the parent application requests a formal reply regarding the interview. With regard to the interview, Applicant provides the following comments. The rejection of claims based on U.S. Patent No. 5 594 464 to Tanaka was discussed at length. Applicant's representative focused mainly on the difference between the liquid crystal utilized by Tanaka and the liquid crystals recited in Applicant's claims. Column 2, lines 14-18 of Tanaka requires bi-stable or metastable liquid crystals so that pseudostates can be maintained a period of time greater than the time required to change the entire display screen state.

Applicant's Figure 3 shows a relationship between optical transmittance and applied voltage that has no hysteresis effect and thus no bi-stable state. Figure 1 of attached U.S. Patent No.

6 583 838 to Hoke discloses a bi-state liquid crystal material that has a hysteresis effect where the up and down states have a different brightness at the same applied voltage. The Hoke patent highlights the large difference between liquid crystal properties for liquid crystals having a bi-stable liquid crystal material as compared to the liquid crystal utilized by Applicant as shown in Applicant's Figure 3. Figure 1 of attached U.S. Patent No. 4 608 558 to Amstutz also illustrates the brightness/optical transmittance versus voltage for a bi-stable liquid crystal.

The difference between bi-stable liquid crystals and the liquid crystals utilized by Tanaka is very significant. As disclosed at column 1, lines 54-60 of Tanaka, the Tanaka display device cannot work properly with liquid crystals having no memory effect or hysteresis effect. Thus, substituting liquid crystals having no prior hysteresis as recited in Applicant's Claim 1, or liquid crystals free from an optical effect of hysteresis and having no metastable states as recited in Applicant's Claim 14, distinguish Tanaka. The use of Applicant's claimed liquid crystals would make the liquid crystal display device of Tanaka inoperative for its intended purposes.

The Examiner is respectfully requested to reconsider the present application and to pass it to issue.

Respectfully submitted,

Brian Tumm

Brian R. Tumm

BRT/ad

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 Rambling Road
Kalamazoo, MI 49008-1631
Phone: (269) 381-1156
Fax: (269) 381-5465

Dale H. Thiel	Reg. No. 24 323
David G. Boutell	Reg. No. 25 072
Ronald J. Tanis	Reg. No. 22 724
Terryence F. Chapman	Reg. No. 32 549
Mark L. Maki	Reg. No. 36 589
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Encl: Form PTO-1449
Copy of U.S. Patent No. 6 583 838
Copy of U.S. Patent No. 4 608 558